



GLOBE and Business Support: A Case Study of a Water Company

Andy Tasker & Linda Lockhart

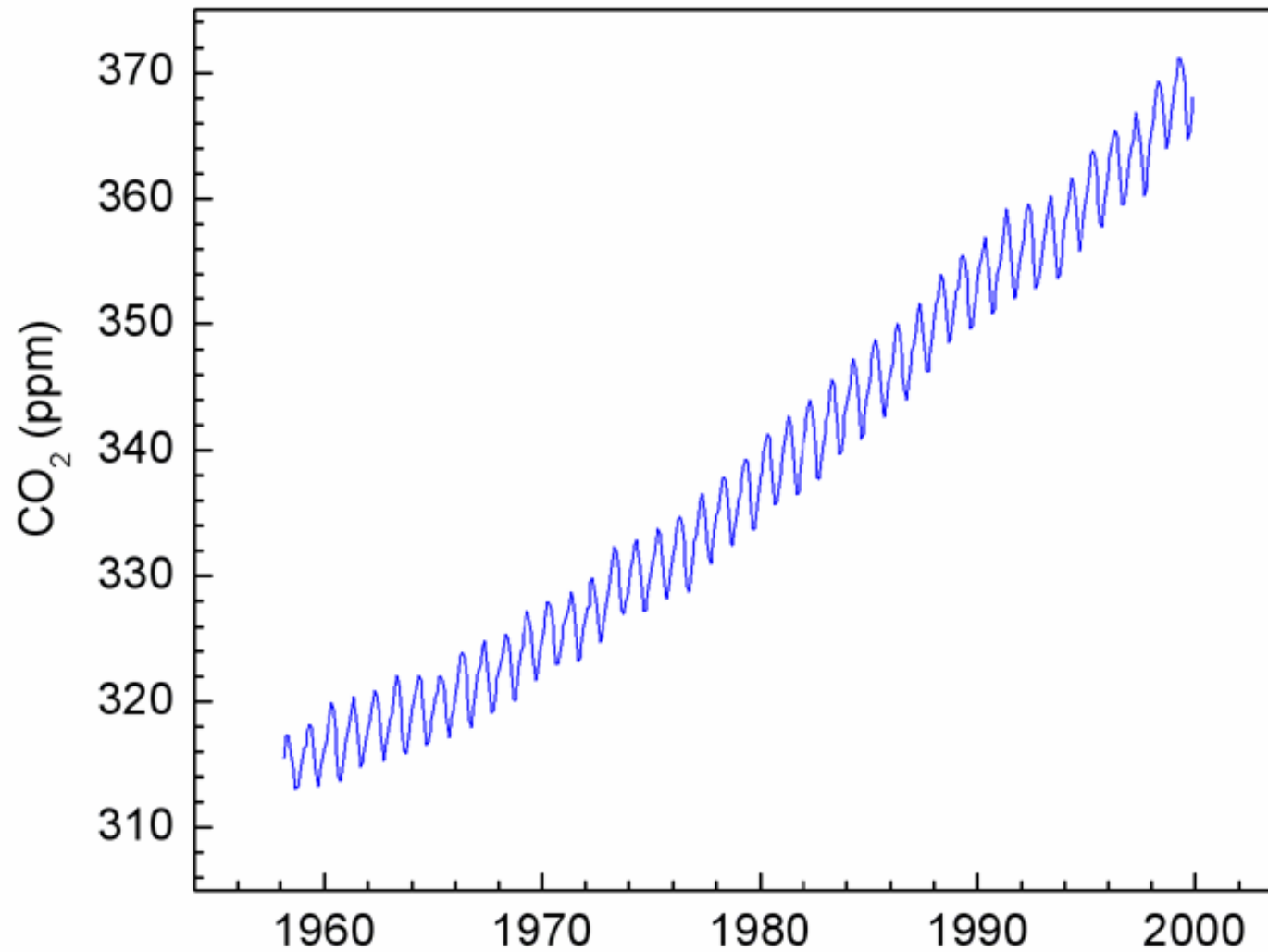
San Antonio. Texas - July 2007



We now know that our climate is changing...



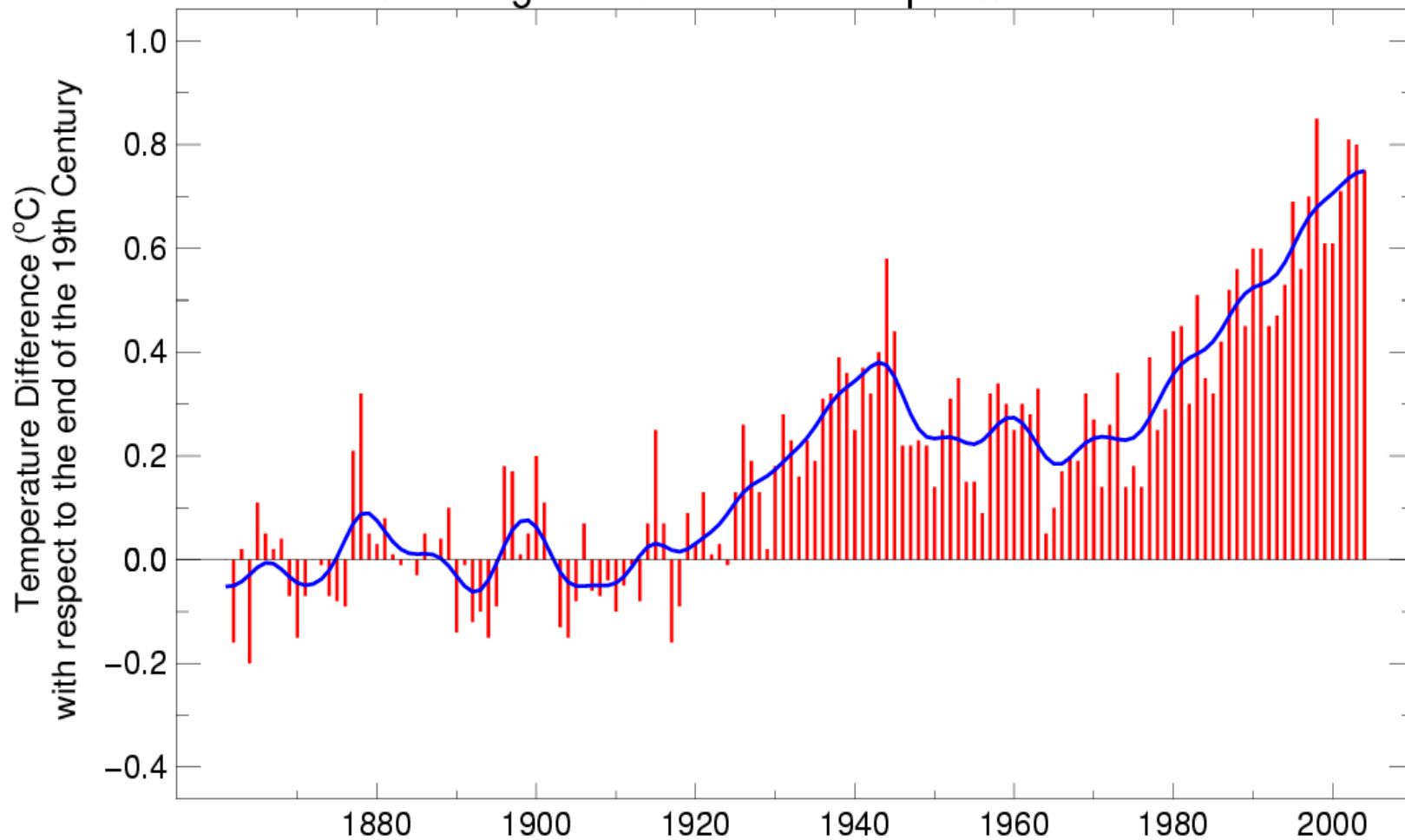
CO₂ Levels have risen



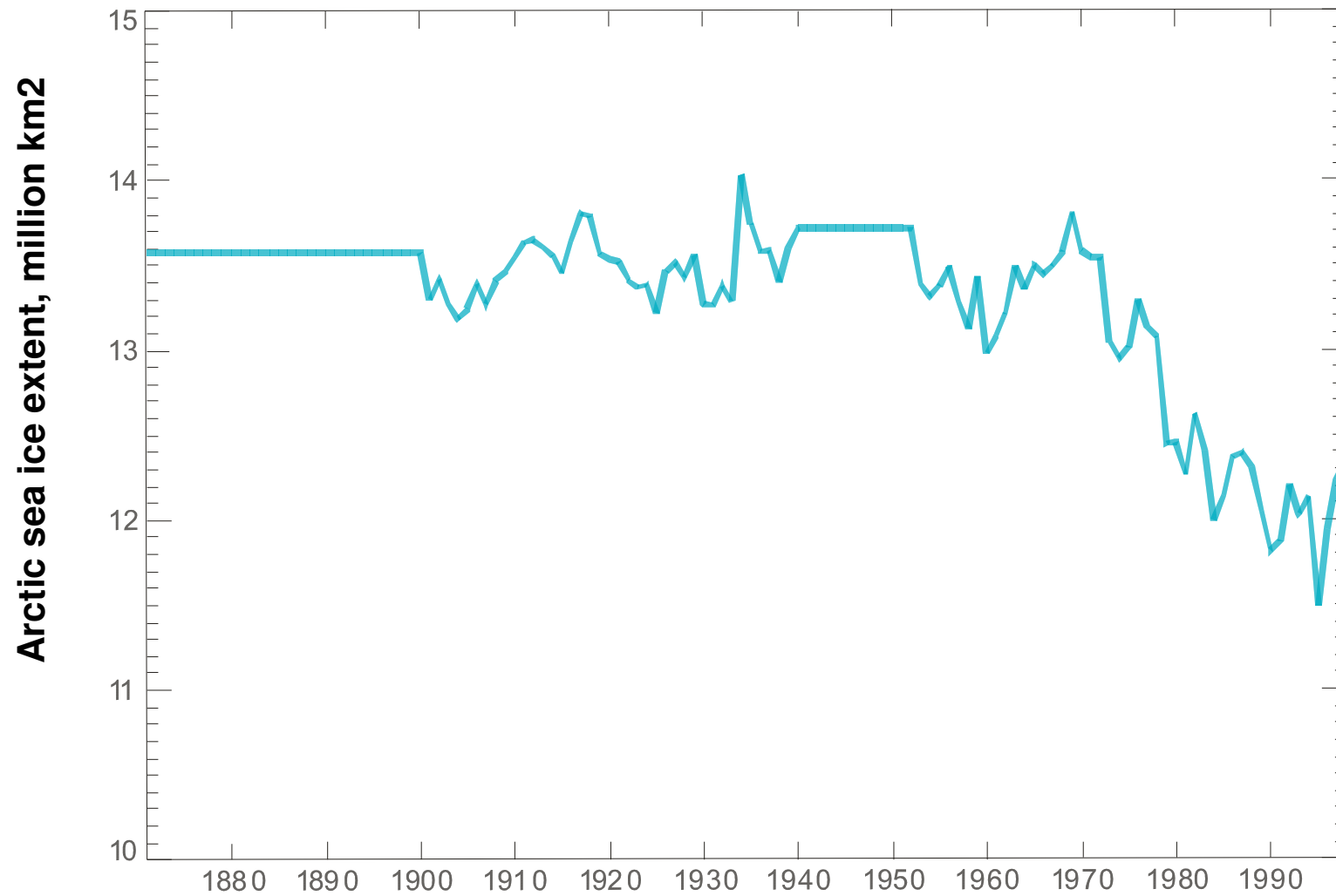
The temperature has increased



Global Average Near-Surface Temperatures 1861–2004



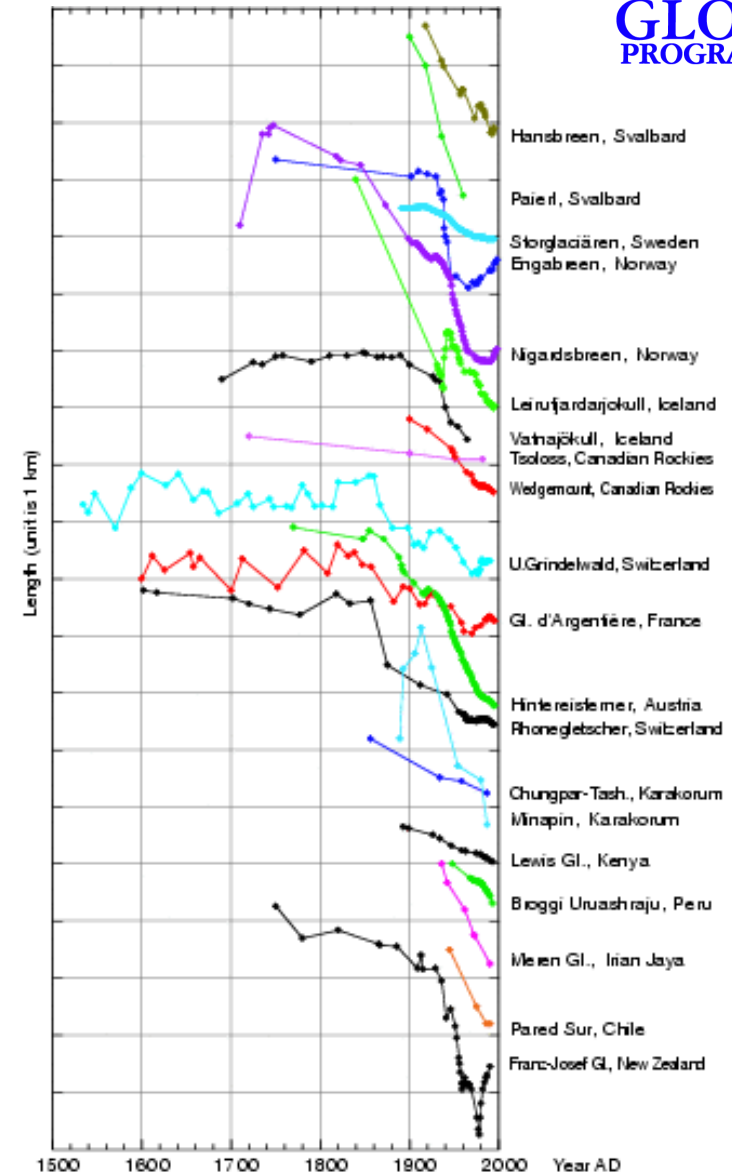
The ice sheets are melting



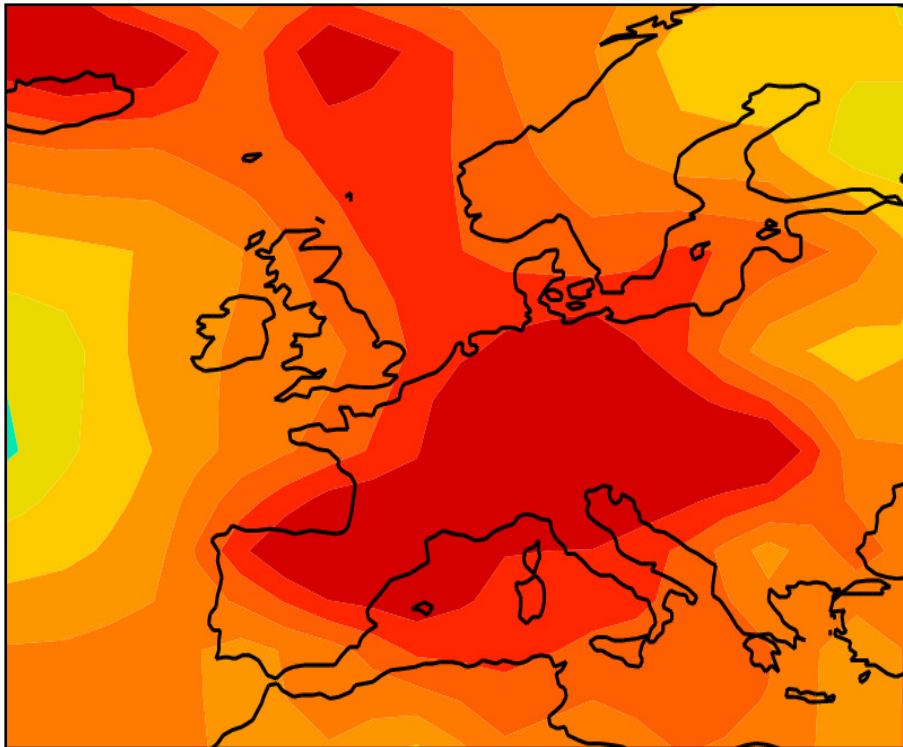
Glaciers are retreating



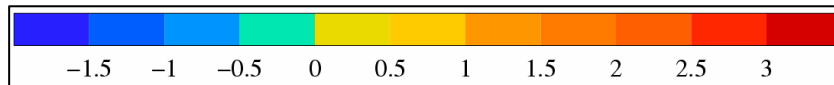
THE
GLOBE
PROGRAMME



There have been more extreme events



Hadley Centre



European hot summer of
2003 caused over
35,000 deaths

There have been more extreme events



THE NEW GROUND ZERO

BY RUPERT CORNWELL

“ Like September 11, whose fourth anniversary is this weekend, Hurricane Katrina is an event whose consequences will extend far beyond the physical, into the mind of America ”

There have been more extreme events



Flash Floods, Warwickshire 17 June 2007

DAILY EXPRESS
The World's Greatest Newspaper
BRITAIN DEFiant
FRIDAY OCTOBER 28, 2005 40p

Prince Charles backs Daily Express warnings on deadly climate change

FOR GOD'S SAKE STOP OUR FREAK WEATHER

PRINCE Charles called for action yesterday to tackle the freak weather crisis, warning: "This is the greatest challenge to face man."

He added his influential voice to the growing clamour for change, led by the Daily Express,

By Padraic Flanagan

to avert the doomsday scenario of global warming predicted by many scientists.

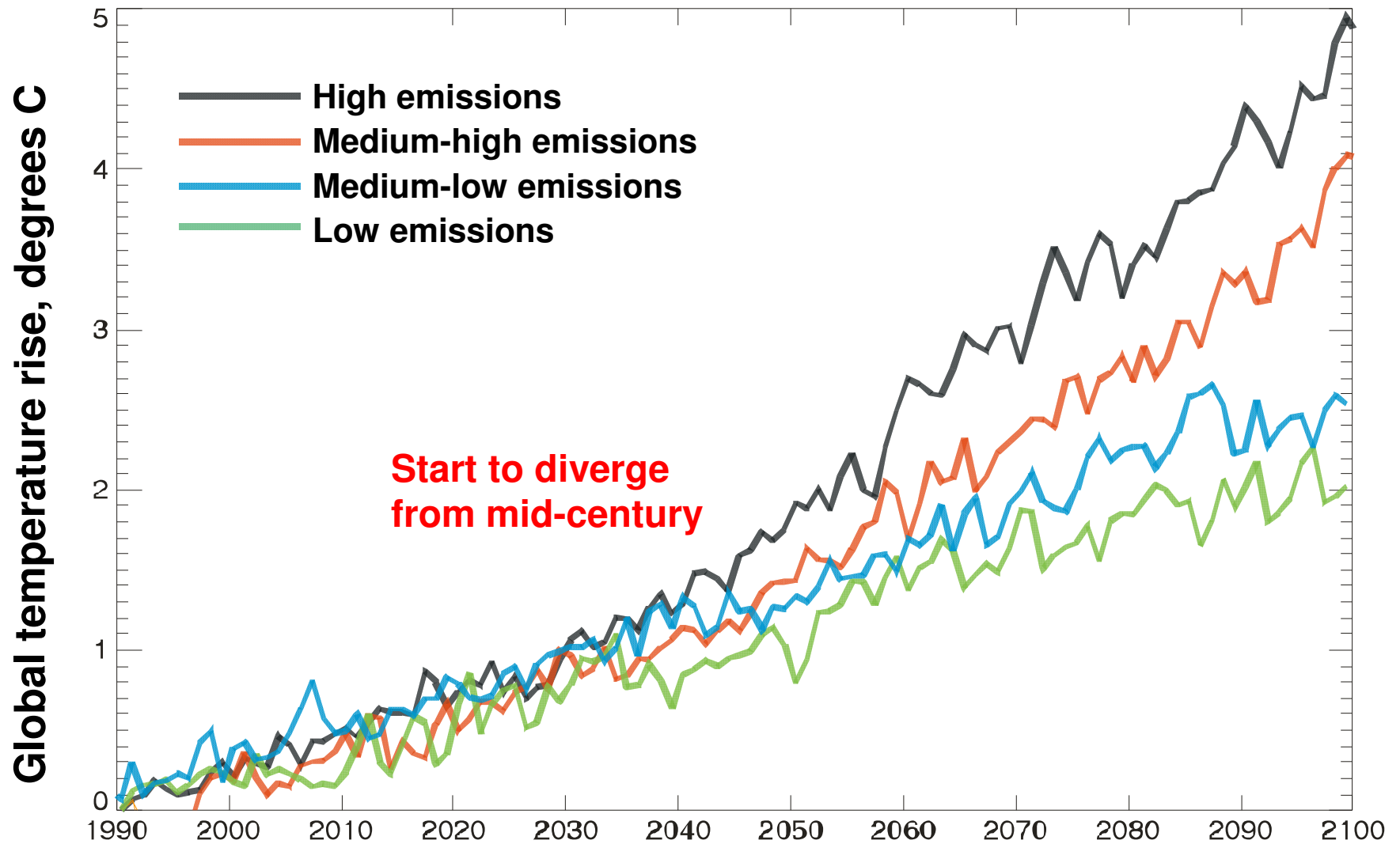
This week we have revealed how climate change is already causing bizarre weather - with much of the country yesterday sweltering in record-breaking 70F temperatures.

Despite the mini-heatwave, experts warned this winter could be the coldest since the devastating snows of 1963 while gas shortages are expected to cause misery for millions.

The impact of global warming was also evident in central America, where many were still without power, food or water in the aftermath of

TURN TO PAGE 4, COLUMN 3

Future projections...



Future projections...



In the UK, we will have:

- Hotter, longer summers
 - Warmer, wetter winters
 - More extreme weather events
 - Rise in mean sea level
-
- Floods in June and in July 2007!



Recent UK storm events have led to:

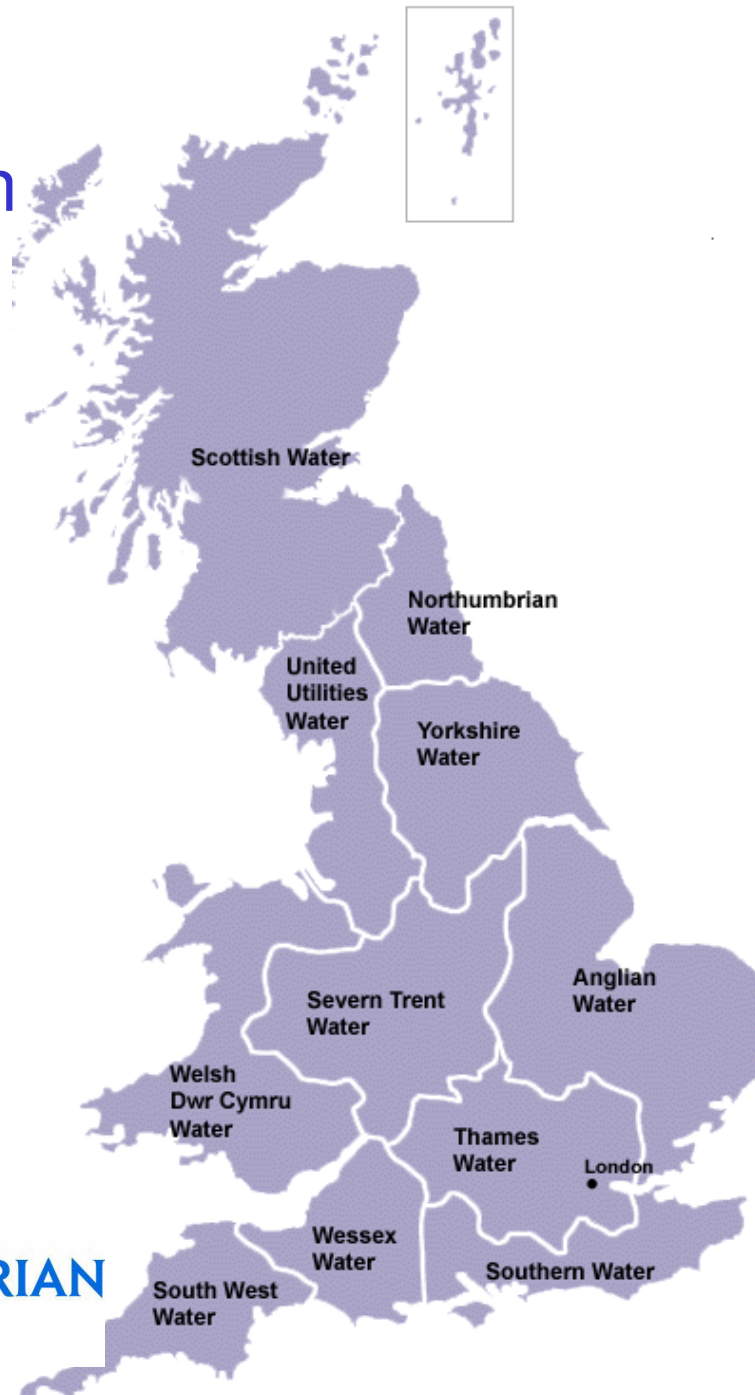
- Sewage works flooding
- Series of pollution events
- Potential prosecution by regulatory agencies
- Dangers to human health
- Lack of drinking & bathing water



Water responsibilities in the UK

- Water Companies in the UK are privatised utilities
- 11 main companies with different water catchments
- They are responsible for supply of drinking water and the disposal of sewage
- **Northumbrian Water** covers North East England (owned 25 % Suez, 75% 'Aquavit' - a consortium comprising Deutsche Bank, Collins Stewart and Ecofin)

The Northumbrian Water Area

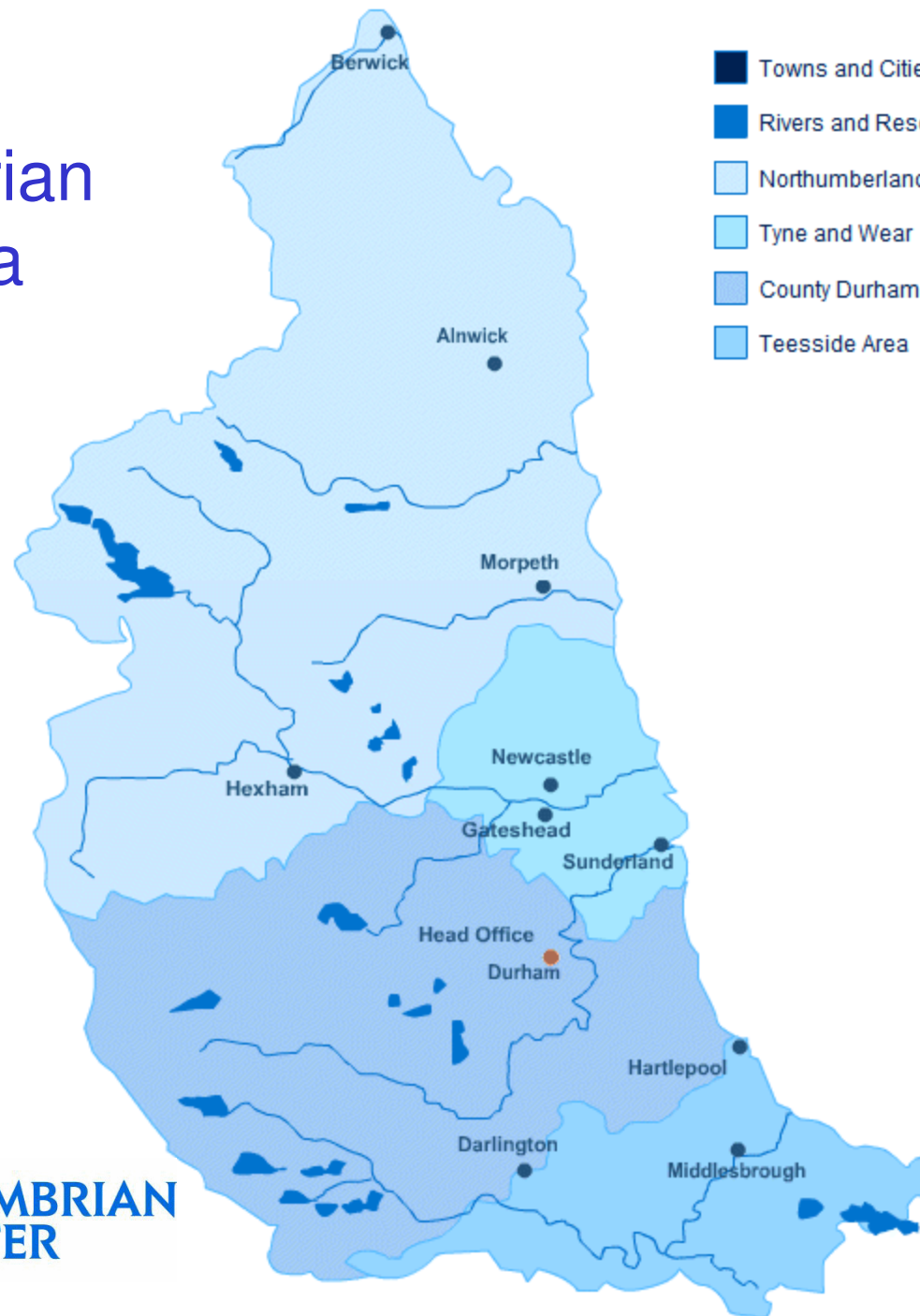


**NORTHUMBRIAN
WATER**

The Northumbrian Water Area



- Towns and Cities
- Rivers and Reservoirs
- Northumberland Area
- Tyne and Wear
- County Durham
- Teesside Area



**NORTHUMBRIAN
WATER**

Northumbrian Water

- Motivated by climate change challenges
- Need more rainfall sampling points
- Need more accuracy & advance warning of rain
- This allows them to better manage their water treatment works
- Wanted to provide Weather Stations in Schools, so we developed a joint project...



THE
GLOBE
PROGRAMME

The Northumbrian Water GLOBE Project

- Support for 85 primary & secondary schools and education centres to become GLOBE schools
- Package includes a Davis Automated Weather Station, manual rain gauge and GLOBE training
- Worth about \$2,000 to each school
- In return, Northumbrian Water receives weather data every 5 minutes from each school



The Northumbrian Water GLOBE Project

Davis Vantage Pro 2 Wireless Weather Station plus software





THE
GLOBE
PROGRAMME

The Northumbrian Water GLOBE Project



The Northumbrian Water GLOBE Project

Setting up your Davis WeatherLink

What's in the Box?

The Davis Vantage Pro Automated Weather Station has 4 components:

1. an **Integrated Sensor Suite (ISS)** which measures temperature, humidity, wind speed and direction,
2. an **Anemometer** to measure wind speed and direction,
3. a **Sensor Interface Module (SIM)** to send the data back to the Envoy unit,
4. an **Envoy unit**, which receives the data and transfers it to your computer.

1. Integrated Sensor Suite (ISS)

This is the main unit which collects the weather data using solar-powered sensors. Inside the ISS are three separate sensors:

- a rain collector with tipping-bucket measuring device (inside the black cylinder)
- a temperature sensor (mounted in the white radiation shield underneath)
- a humidity sensor (also mounted in the radiation shield)

Additional sensors can also be added later, including solar radiation and UV detectors.

3. Sensor Interface Module (SIM)

This is the 'brains' of the ISS, located on the side in a white box with a solar panel on it. The SIM collects weather data from the ISS sensors and then transmits the data wirelessly to the Envoy unit using a low powered radio signal.

4. Envoy

This is a wireless receiver which collects the data from the ISS, then passes it to your computer through a USB cable.



The Northumbrian Water GLOBE Project

Installing your Davis WeatherLink

What is it?

The Davis WeatherLink software is a programme that enables you to:

- Download and store your own Weather Station's data,
- Produce instant visualisations of the weather at your school or centre,
- Prepare reports for sending to the GLOBE website, and
- Automatically transmit your data to a central website run by Northumbrian Water.
- You could also link your school's website to the Northumbrian Water live data about your school's weather.

1. What computer do you need?

The Davis WeatherLink software will work on any PC operating Windows including Windows 95, Windows 98, and Windows XP. It doesn't have to be a powerful or modern PC.

However, to transmit the data onwards it must have a connection to the Internet (either a dial-up modem, or more probably a broadband link through the school's network). The PC must also be left **switched on** at all times to live data.

The PC could be dedicated specially for the Weather Station, or used for such as word-processing or Internet browsing, as long as the WeatherLink background. The PC you use could even be the server on your network.

2. Installing the WeatherLink software

The Davis WeatherLink software will install itself on your PC like any other programme on a PC you might like some help from a colleague.

1. Simply put the CD in the CD-drive, and follow the on-screen instructions.
2. WeatherLink will install itself in a folder called c:\WeatherLink, but you can change it to c:\Program Files\WeatherLink, or anywhere else you like.
3. When installation is complete you will have a shortcut icon on your desktop.
4. Click the icon to open WeatherLink - it will look like the screen below.



The Northumbrian Water GLOBE Project



Sending your data to Northumbrian Water

The WeatherLink software has an inbuilt programme to allow you to send data to a website automatically. Once it is set up, data will be sent every 5 minutes to the special Northumbrian Water website, providing a unique weather record for the North East.

Before you start you need to have registered with GLOBE, as you will need your **GLOBE Username** later. You must also have got the WeatherLink software installed and running properly. Test by pressing the 'Strip Chart' button, which should give you a series of graphs of your weather data.

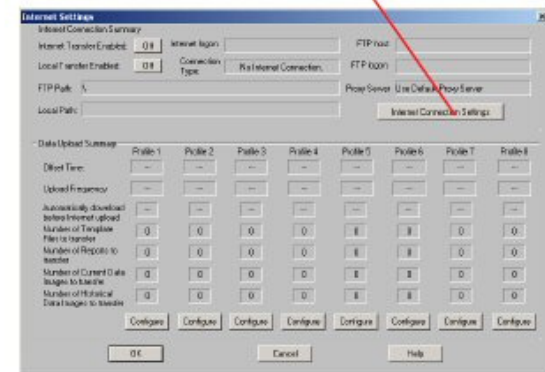
Copying Files

Firstly copy the 2 files that we have emailed to you (**GLOBE01.hqx** and **davisticker.class**) and paste them onto your Weather Station PC's hard drive, putting them in the folder c:\WeatherLink\YourSiteName\Templates (where 'YourSiteName' is the name you have given to your site on your computer. Use Windows Explorer to find it if you're not sure).

Setting up the Internet link

We've designed these instructions to be easy to follow - but if you get stuck you can start again at any point. And if you get really stuck, email us at admin@globe.org.uk!

1. Open WeatherLink and click on 'Setup' from the top drop-down menus, then click 'Internet Settings'.
2. A new box opens. Click on the 'Internet Connection Settings' box in the middle right hand side.





The Northumbrian Water GLOBE Project

So far...

- New educational resources and web-links developed
- 12 teachers trained in July 2007 at the North East Science Centre



The Northumbrian Water GLOBE Project





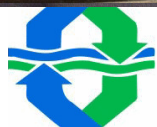
THE
GLOBE
PROGRAMME

The Northumbrian Water GLOBE Project

So far...

- Officially launched at 2 schools on 19 July 2007 with 2 TV 'Weathermen'
- Good media coverage – BBC, ITV, local radio, local newspapers
- Involvement of CEO and a Director of Northumbrian Water



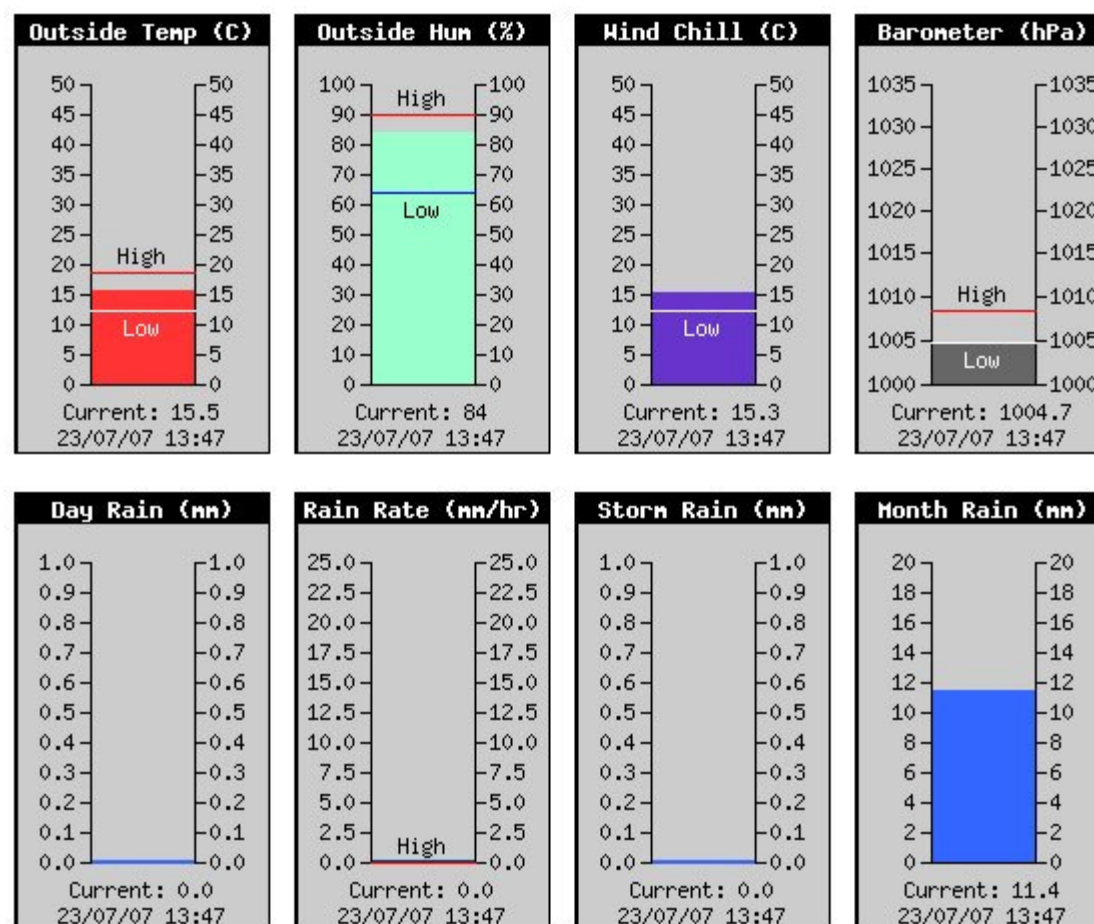


**NORTHUMBRIAN
WATER**

The Northumbrian Water GLOBE Programme
Current Weather at Hurworth School, Darlington
 Last updated on 23/07/07 at 13:47

So far...

- First test data being sent to new website





The Northumbrian Water GLOBE Project

What next?

- More training in September – December with updated materials
- Develop local GLOBE network & projects, involving Northumbrian Water staff
- Establish watershed and climate change links with GLOBE schools and partners internationally

...Extend to other utility companies everywhere!





The Northumbrian Water GLOBE Project

In summary

The Northumbrian Water GLOBE Project:

- Is a unique project linking business & schools
- Clear benefits for children, teachers, schools, the water company – and for GLOBE
- Demonstrates the real-time use of GLOBE data
- Raises awareness of climate change issues





THE
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PROGRAMME

The Northumbrian Water GLOBE Project

New, exciting and fun!



NORTHUMBRIAN
WATER





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